

LISTING OF THE CLAIMS

Claims 1-54 were originally pending. Please amend claims 1-54. No claims are canceled or withdrawn. Accordingly, claims 1-54 remain pending.

The following listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently amended) A computer-implemented method comprising:
converting, by a computing device, unstructured service requests to one or more structured answer objects, each unstructured service request including information to narrow product problem symptom(s) to a root cause, each structured answer object comprising hierarchically structured historic problem diagnosis data; and

in view of a the product problem symptom(s) description:

identifying a set of the one or more structured answer data objects, each structured ~~solution~~ answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s) description; and

providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis.

2. (Currently amended) A The method as recited in of claim 1, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution.

3. (Currently amended) ~~A~~ The method as recited in of claim 1, and wherein the problem diagnosis data comprise a link to a product support article.

4. (Currently amended) ~~A~~ The method as recited in of claim 1, and wherein converting the unstructured service requests, identifying the set, and providing the historic and hierarchically structured problem diagnosis data are performed by a server computing device, and wherein the method further comprises:

receiving, from a client computing device, the product problem description;

and

wherein providing the historic and hierarchically structured problem diagnosis data further comprises:

searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set;

communicating the set to the client computing device for display by a troubleshooting wizard to the end-user.

5. (Currently amended) ~~A~~ The method as recited in of claim 1, wherein the method further comprises dynamically generating a knowledge base article from information provided by the set.

6. (Currently amended) ~~A~~ The method as recited in of claim 1, wherein after converting the unstructured service requests and before identifying the set

and providing the historic and hierarchically structured problem diagnosis data,
the method further comprises:

generating an index by:

extracting features from the structured answer objects;

analyzing the features to identify the terms and the phrases;

assigning relevance weight to the terms and the phrases;

normalizing terminology within the terms and the phrases; and

wherein operations for identifying the set ~~is~~ are based on information
in the index.

7. (Currently amended) A The method as recited in ~~of~~ claim 6, wherein
after converting the unstructured service requests and before identifying the set
and providing the historic and hierarchically structured problem diagnosis data,
the method further comprises:

clustering respective ones of the structured answer objects based on the
index to group related structured answer objects; and

wherein providing the set, ~~if there is more than one structured answer object~~
~~in the set, the set comprises~~ the set comprises a reinforced cluster of structured
answer objects.

8. (Currently amended) A The method as recited in ~~of~~ claim 7, wherein
clustering comprises reinforced and unified clustering operations.

9. (Currently amended) A method at least partially implemented by a
computing device comprising:

communicating, by a troubleshooting wizard, a search request to a server computing device, the troubleshooting wizard allows a user to systematically present and leverage hierarchically structured historical product problem diagnosis data from structured answer data objects in view of a product problem description, the search request comprising a the product problem description;

responsive to receiving a response to the search request, presenting, by a the troubleshooting wizard, information from the response to the user; and

wherein the information comprises the hierarchically structured historic problem diagnosis data, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description.

10. (Currently amended) ~~A~~ The method as recited in of claim 9, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem description(s), symptom(s), cause(s), and resolution(s) information.

11. (Currently amended) ~~A~~ The method as recited in of claim 9, wherein the information comprises a link to a product support article.

12. (Currently amended) ~~A~~ The method as recited in of claim 9, wherein the information comprises a set of structured answer objects.

13. (Currently amended) ~~A~~ The method as recited in of claim 12, wherein respective ones of the structured answer objects are clustered by the

server as corresponding to one another, the clustering being based on reinforced clustering operations.

14. (Currently amended) A ~~The method as recited in~~ of claim 13, wherein the clustering is further based on unified clustering operations.

15. (Currently amended) A tangible computer-readable ~~media~~ medium comprising computer-executable instructions for:

converting, by a computing device, unstructured service requests to one or more structured answer objects, each unstructured service request including information to narrow product problem symptom(s) to a root cause, each structured answer object comprising hierarchically structured historic problem diagnosis data; and

in view of a the product problem symptom(s) description:

identifying a set of the one or more structured answer data objects, each structured ~~solution~~ answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s) description; and

providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis.

16. (Currently amended) A ~~The~~ computer-readable medium ~~media~~ as ~~recited in~~ of claim 15, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution.

17. (Currently amended) ~~A~~ The computer-readable medium ~~media~~ as recited in of claim 15, and wherein the problem diagnosis data comprise a link to a product support article.

18. (Currently amended) ~~A~~ The computer-readable medium ~~media~~ as recited in of claim 15, and wherein converting the unstructured service requests, identifying the set, and providing the historic and hierarchically structured problem diagnosis data are performed by a server computing device, and wherein the computer-executable instruction further comprise instructions for:

receiving, from a client computing device, the product problem description;
and

wherein providing the historic and hierarchically structured problem diagnosis data further comprises:

searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set;

communicating the set to the client computing device for display by a troubleshooting wizard to the end-user.

19. (Currently amended) ~~A~~ The computer-readable medium ~~media~~ as recited in of claim 15, wherein the computer-executable instruction further comprise instructions for dynamically generating a knowledge base article from information provided by the set.

20. (Currently amended) A ~~The~~ computer-readable medium ~~media~~ as ~~recited in~~ of claim 15, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instruction further comprise instructions for:

generating an index by:

- extracting features from the structured answer objects;
- analyzing the features to identify the terms and the phrases;
- assigning relevance weight to the terms and the phrases;
- normalizing terminology within the terms and the phrases; and
- wherein identifying the set is based on information in the index.

21. (Currently amended) A ~~The~~ computer-readable medium ~~media~~ as ~~recited in~~ of claim 20, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instruction further comprise instructions for:

clustering respective ones of the structured answer objects based on the index to group related structured answer objects; and

wherein providing the set, ~~if there is more than one structured answer object in the set, the set comprises~~ the set comprises a reinforced cluster of structured answer objects.

22. (Currently amended) ~~A~~ The computer-readable medium ~~media~~ as recited in of claim 21, wherein clustering comprises reinforced and unified clustering operations.

23. (Currently amended) A tangible computer-readable ~~media~~ medium comprising computer-executable instructions for:

communicating, by a troubleshooting wizard, a search request to a server computing device, the troubleshooting wizard allows a user to systematically present and leverage hierarchically structured historical product problem diagnosis data from structured answer data objects in view of a product problem description, the search request comprising a the product problem description; and

responsive to receiving a response to the search request, presenting, by a the troubleshooting wizard, information from the response to the user, the information comprising the hierarchically structured historic problem diagnosis data, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description.

24. (Currently amended) ~~A~~ The computer-readable medium ~~media~~ as recited in of claim 23, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem description, symptom, cause, and resolution information.

25. (Currently amended) ~~A~~ The computer-readable medium ~~media~~ as recited in of claim 23, wherein the information comprises a link to a product support article.

26. (Currently amended) A ~~The~~ computer-readable medium ~~media~~ as ~~recited in~~ of claim 23, wherein the information comprises a set of structured answer objects.

27. (Currently amended) A ~~The~~ computer-readable medium ~~media~~ as ~~recited in~~ of claim 26, wherein respective ones of the structured answer objects were clustered by the server as corresponding to one-another, the clustering being based on reinforced clustering operations.

28. (Currently amended) A ~~The~~ computer-readable medium ~~media~~ as ~~recited in~~ of claim 27, wherein the clustering is further based on unified clustering operations.

29. (Currently amended) A tangible computer-readable ~~media~~ medium comprising a structured ~~solution request~~ answer object data structure for use in product problem analysis and diagnosis ~~diagnosis~~, the structured ~~solution request~~ answer object data structure comprising:

- a product problem description data field;
- a product problem cause data field;
- a product problem resolution data field; and

wherein the product problem description data field is a parent node of the product problem cause data field, and the product problem cause data field is a parent node of the product problem resolution data field.

30. (Currently amended) ~~A~~ The computer-readable ~~media as recited in~~ medium of claim 29, wherein the structured ~~solution request~~ answer object data structure further comprises a product problem symptom data field, the product problem description field being a parent node of the product problem symptom data field.

31. (Currently amended) A computing device comprising:
a processor; and
a memory coupled to the processor, the memory comprising computer-program instructions executable by the processor for:
converting, by a computing device, unstructured service requests to one or more structured answer objects, each unstructured service request including information to narrow product problem symptom(s) to a root cause, each structured answer object comprising hierarchically structured historic problem diagnosis data; and
in view of a the product problem symptom(s) description:
identifying a set of the one or more structured answer data objects, each structured ~~solution~~ answer data object in the set comprising term(s) and/or phrase(s) related to the product problem symptom(s) description; and
providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis.

32. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 31, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution.

33. (Currently amended) A The computing device ~~as recited in~~ of claim 31, and wherein the problem diagnosis data comprise a link to a product support article.

34. (Currently amended) A The computing device ~~as recited in~~ of claim 31, and wherein converting the unstructured service requests, identifying the set, and providing the historic and hierarchically structured problem diagnosis data are performed by a server computing device, and wherein the computer-executable instruction further comprise instructions for:

receiving, from a client computing device, the product problem description;
and

wherein providing the historic and hierarchically structured problem diagnosis data further comprises:

searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set;

communicating the set to the client computing device for display by a troubleshooting wizard to the end-user.

35. (Currently amended) A The computing device ~~as recited in~~ of claim 31, wherein the computer-executable instruction further comprise instructions for dynamically generating a knowledge base article from information provided by the set.

36. (Currently amended) ~~A~~ The computing device as ~~recited in~~ of claim 31, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instruction further comprise instructions for:

- generating an index by:
- extracting features from the structured answer objects;
- analyzing the features to identify the terms and the phrases;
- assigning relevance weight to the terms and the phrases;
- normalizing terminology within the terms and the phrases; and
- wherein identifying the set is based on information in the index.

37. (Currently amended) ~~A~~ The computing device as ~~recited in~~ of claim 36, wherein after converting the unstructured service requests and before identifying the set and providing the historic and hierarchically structured problem diagnosis data, the computer-executable instruction further comprise instructions for:

- clustering respective ones of the structured answer objects based on the index to group related structured answer objects; and
- wherein providing the set, ~~if there is more than one structured answer object in the set, the set comprises~~ the set comprises a reinforced cluster of structured answer objects.

38. (Currently amended) ~~A~~ The computing device as ~~recited in~~ of claim 37, wherein clustering comprises reinforced and unified clustering operations.

39. (Currently amended) A computing device comprising:
a processor; and
a memory coupled to the processor, the memory comprising computer-program instructions executable by the processor for:
communicating, by a troubleshooting wizard, a search request to a server computing device, the troubleshooting wizard allows a user to systematically present and leverage hierarchically structured historical product problem diagnosis data from structured answer data objects in view of a product problem description, the search request comprising a the product problem description; and
responsive to receiving a response to the search request, presenting, by a the troubleshooting wizard, information from the response to the user, the information comprising the hierarchically structured historic problem diagnosis data, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description.

40. (Currently amended) A The computing device ~~as recited in~~ of claim 39, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem description, symptom, cause, and resolution information.

41. (Currently amended) A The computing device ~~as recited in~~ of claim 39, wherein the information comprises a link to a product support article.

42. (Currently amended) ~~A~~ The computing device as recited in of claim 39, wherein the information comprises a set of structured answer objects.

43. (Currently amended) The computing device of ~~A computer readable media as recited in~~ claim 42, wherein respective ones of the structured answer objects were clustered by the server as corresponding to one-another, the clustering being based on reinforced clustering operations.

44. (Currently amended) The computing device of ~~A computer readable media as recited in~~ claim 43, wherein the clustering is further based on unified clustering operations.

45. (Currently amended) A computing device comprising:
means for converting unstructured service requests to one or more structured answer objects, each unstructured service request including information to narrow product problem symptom(s) to a root cause, each structured answer object comprising hierarchically structured historic problem diagnosis data; and
in view of a product problem description:

means for identifying a set of the one or more structured answer data objects, each structured ~~solution~~ answer data object in the set comprising term(s) and/or phrase(s) related to the product problem description; and

means for providing historic and hierarchically structured problem diagnosis data from the set to an end-user for product problem diagnosis.

46. (Currently amended) A The computing device ~~as recited in~~ of claim 45, and wherein the problem diagnosis data comprise any one or more of a product problem description, symptom, cause, and resolution.

47. (Currently amended) A The computing device ~~as recited in~~ of claim 45, and wherein the problem diagnosis data comprise a link to a product support article.

48. (Currently amended) A The computing device ~~as recited in~~ of claim 45, and further comprising:

means for receiving, from a client computing device, the product problem description; and

wherein the means for providing the historic and hierarchically structured problem diagnosis data further comprises:

means for searching an index for terms and/or phrases that match term(s) in the product problem description to identify the one or more structured answer objects in the set; and

means for communicating the set to the client computing device for display by a troubleshooting wizard to the end-user.

49. (Currently amended) A The computing device ~~as recited in~~ of claim 45, further comprising means for dynamically generating a knowledge base article from information provided by the set.

50. (Original) A computing device comprising:

means for communicating a search request to a server computing device, the means allowing a user to systematically present and leverage hierarchically structured historical product problem diagnosis data from structured answer data objects in view of a product problem description, the search request comprising a the product problem description; and

responsive to receiving a response to the search request, means for presenting information from the response to the user, the information comprising the hierarchically structured historic problem diagnosis data, the historic problem diagnosis data being associated with term(s) and/or phrase(s) related to the product problem description.

51. (Currently amended) ~~A~~ The computing device as recited in of claim 50, wherein the historic problem diagnosis data comprise any one or more of hierarchically structured product problem description, symptom, cause, and resolution information.

52. (Currently amended) The computing device of ~~A computer-readable media as recited in~~ claim 50, wherein the information comprises a link to a product support article.

53. (Currently amended) The computing device of ~~A computer-readable media as recited in~~ claim 50, wherein the information comprises a set of structured answer objects.

54. (Currently amended) The computing device of ~~A computer-readable media as recited in~~ claim 53, wherein respective ones of the structured answer objects were clustered by the server as corresponding to one another.